<u>CLAIMS:</u>

1.      A method for encoding scalable video comprising the steps of:

forming (1190) a motion compensated full resolution prediction;

combining (1105) the motion compensated full resolution prediction from an image block to form a prediction residual;

downsampling (1112) the prediction residual to form a low resolution downsampled prediction residual; and

coding (1115) the low resolution downsampled prediction residual.

2.      A spatial scalable video encoder for encoding an image block, comprising:

a motion compensator (1190) for forming a motion compensated full resolution prediction;

a subtractor (1105), in signal communication with said motion compensator, for subtracting the motion compensated full resolution prediction from the image block to form a prediction residual;

a downsampler (1112), in signal communication with said subtractor, for downsampling the prediction residual to form a low resolution downsampled prediction residual; and

a transformer/quantizer (1115), in signal communication with said downsampler, for coding the low resolution downsampled prediction residual.

3.      The spatial scalable video encoder of claim 2, further comprising:

an inverse quantizer/inverse transformer (1125), in signal communication with said transformer/quantizer, for inverse quantizing and inverse transforming the coded low resolution downsampled prediction residual to form a coded prediction residual;

an upsampler (1155), in signal communication with said inverse quantizer/inverse transformer, for upsampling the coded prediction residual to form a coded upsampled prediction residual; and

an adder (1199), in signal communication with said upsampler, for adding the upsampled prediction residual to a motion compensated full resolution prediction to form a sum signal.

4.      The spatial scalable video encoder of claim 3, further comprising an entropy coder (1120), in signal communication with said transformer/quantizer, for encoding the coded low resolution downsampled prediction residual into a base layer bitstream.

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5.      The spatial scalable video encoder of claim 3, further comprising:
        a subtractor (1160), in signal communication with said adder (1199), for subtracting the sum signal from the input image block to form a difference signal; and
        another quantizer/transformer (1170), in signal communication with said

10      subtractor, for forming a full resolution enhancement layer error signal from the difference signal.

6.      The spatial scalable video encoder of claim 5, further comprising:
        an entropy coder (1120), in signal communication with said quantizer/

15      transformer, for encoding the coded downsampled prediction residual into a base layer bitstream; and
        an entropy coder (1175), in signal communication with said quantizer/transformer, for encoding the full resolution enhancement layer error signal into a enhancement layer bitstream.

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7.      The spatial scalable video encoder of claim 6, wherein the enhancement layer bitstream is encoded only for intra-coded slices in the base layer bitstream.

25      8.      An apparatus for encoding scalable video, comprising:
        means for forming (1190) a motion compensated full resolution prediction;
        means for combining (1105) the motion compensated full resolution prediction from an image block to form a prediction residual;
        means for downsampling (1112) the prediction residual to form a low

30      resolution downsampled prediction residual; and
        means for coding (1115) the low resolution downsampled prediction residual.

9.      A method for encoding an image block, comprising the steps of:

forming (1325) a motion compensated full resolution prediction;

subtracting (1330) the motion compensated full resolution prediction from the image block to form a prediction residual;

downsampling (1335) the prediction residual to form a low resolution

5      downsampled prediction residual; and

coding (1345) the low resolution downsampled prediction residual to form a coded low resolution downsampled prediction residual.


10.    The method of claim 9, further comprising the steps of:

10      inverse quantizing and inverse transforming (1350) the coded low resolution downsampled prediction residual to form a coded prediction residual;

upsampling (1355) the coded prediction residual to form a coded upsampled prediction residual; and

adding (1360) the upsampled prediction residual to a motion compensated full

15     resolution prediction to form a sum signal.


11.    The method of claim 10, further comprising the step of encoding (1345) the coded low resolution downsampled prediction residual into a base layer bitstream.

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12.    The spatial scalable video encoder of claim 10, further comprising the steps of:

subtracting (1365) the sum signal from the input image block to form a difference signal; and

25     quantizing and transforming (1370) the difference signal to form a full resolution enhancement layer error signal.


13.    The method of claim 12, further comprising the steps of:

encoding (1345) the coded downsampled prediction residual into a base layer

30     bitstream; and

encoding (1375) the full resolution enhancement layer error signal into a enhancement layer bitstream.

14.    The method of claim 13, wherein the enhancement layer bitstream is encoded only for intra-coded slices in the base layer bitstream.

15.    A scalable compressed video signal data structure formed by a method comprising the steps of:

forming (1325) a motion compensated full resolution prediction;

subtracting (1330) the motion compensated full resolution prediction from the image block to form a prediction residual;

downsampling (1335) the prediction residual to form a low resolution downsampled prediction residual; and

coding (1345) the low resolution downsampled prediction residual to form a coded low resolution downsampled prediction residual.